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Executive Summary

ES.1 LEAD AGENCIES, COOPERATING AND PARTICIPATING AGENCIES

The Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT) and the Alamo Regional Mobility Authority (Alamo RMA) are the lead agencies on the United States Highway 281 (US 281) Corridor Project. The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT. The following agencies have agreed to be Cooperating and Participating Agencies in the Environmental Impact Statement (EIS) process:

US 281 EIS Cooperating Agencies:

- U.S. Army Corps of Engineers
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

US 281 EIS Participating Agencies:

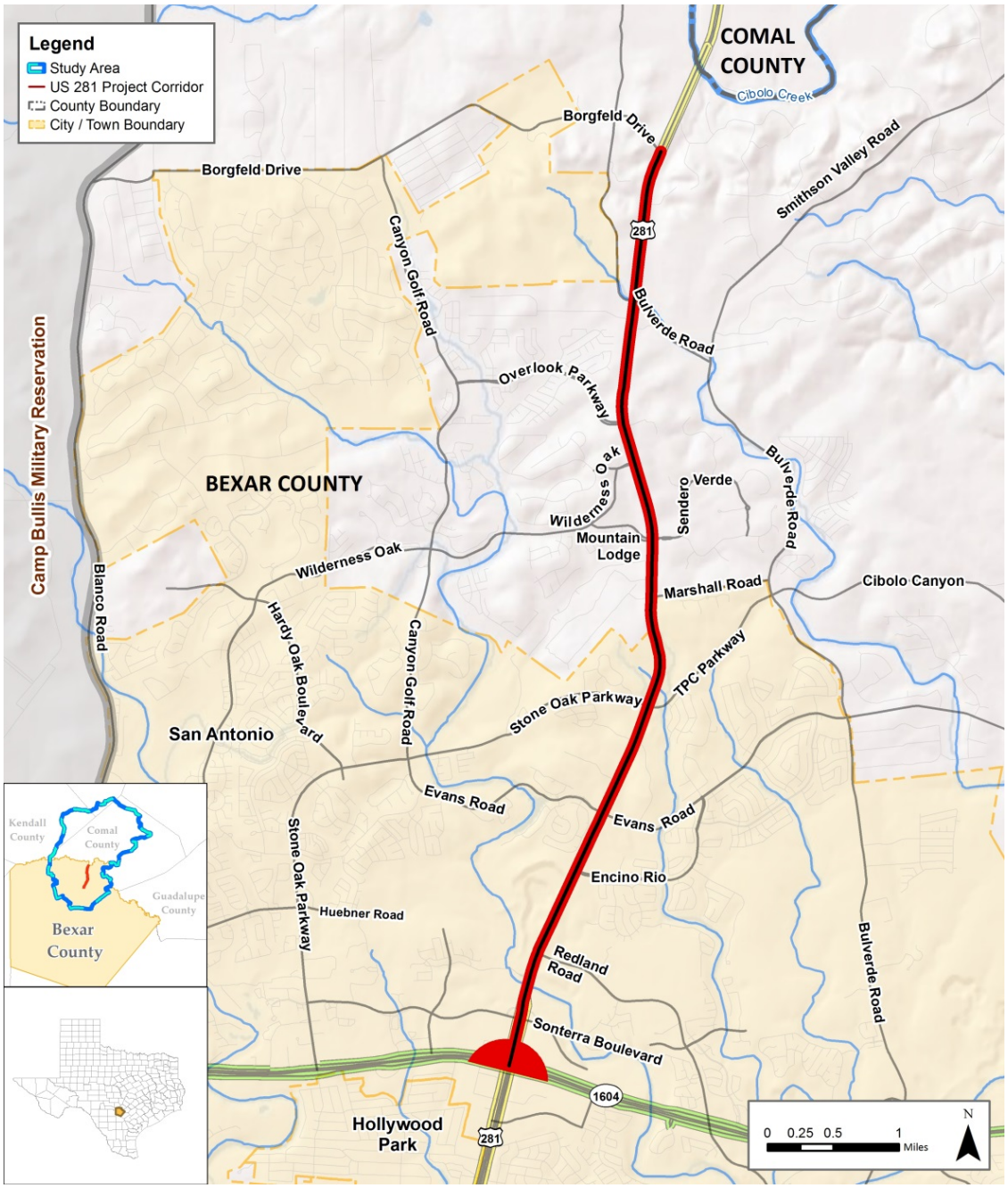
- Bureau of Indian Affairs – Anadarko Agency
- Tribal Nations: Apache Tribe of Oklahoma, Wichita and Affiliated Tribes, Alabama-Quassarte Tribal Town, Caddo Nation of Oklahoma, Comanche Nation of Oklahoma, Kiowa Indian Tribe of Oklahoma, Mescalero Apache Tribe, Seminole Nation of Oklahoma, The Delaware Nation, Tonkawa Tribe of Indians of Oklahoma
- Camp Bullis
- Texas Historical Commission
- Texas Parks and Wildlife Department
- Texas Commission on Environmental Quality
- Bexar County
- City of San Antonio
- Town of Hollywood Park
- Comal County
- City of Bulverde
- Edwards Aquifer Authority
- San Antonio Water System
- San Antonio River Authority
- Alamo Area Metropolitan Planning Organization *formerly San Antonio-Bexar County Metropolitan Planning Organization (MPO)*
- VIA Metropolitan Transit
- Alamo Area Council of Governments

- Alamo Area Rural Planning Organization
- San Antonio Water System *formerly BexarMet*

ES.2 SUMMARY OF THE ACTION

The Final EIS evaluates the environmental, social and economic impacts potentially resulting from the proposed construction of the US 281 Corridor Project. The proposed, federally-funded project is being developed by the Alamo RMA in conjunction with FHWA and TxDOT. The limits of the proposed project extend from Loop 1604 within the city of San Antonio to Borgfeld Drive in northern Bexar County, Texas (**Figure ES-1**).

Figure ES-1: Project location



Source: US 281 EIS Team, 2011.

The proposed project includes improvements to US 281 along an approximately eight mile stretch from Loop 1604 to just north of Borgfeld Drive in northern Bexar County, Texas. Four direct connector ramps that compromise the northern half of the US 281 interchange with Loop 1604 are included in the proposed improvements. From Loop 1604 to Stone Oak Parkway US 281 would be expanded to a six-lane expressway (two non-toll general purpose lanes with an auxiliary lane plus one managed lane in each direction) and non-toll northern direct connectors would be built at Loop 1604. From Loop 1604 to approximately Stone Oak Parkway, the expressway lanes would be situated between three partial access-controlled outer lanes in each direction, also known as frontage roads. From Stone Oak Parkway to the Borgfeld Drive, US 281 would ultimately be expanded to a six-lane expressway (three managed lanes in each direction) with two non-toll outer lanes in each direction. From approximately Stone Oak Parkway to Borgfeld Drive, the expressway lanes would be managed and the outer lanes would function as US 281. The proposed improvements would also include bicycle and pedestrian facilities and direct access to and from the VIA Park and Ride facility. The proposed US 281 Corridor Project is included in the current *Mobility 2040*, which is the MPO's long-range metropolitan transportation plan (MTP). The typical width of the right-of-way (ROW) would be 400 feet.

Several attempts to improve the US 281 project corridor have been made by FHWA and TxDOT over the last 25 years. Project planning, environmental studies, engineering and public involvement activities have been conducted almost continuously since the mid-1980s. However, the only additional capacity provided as a result of these efforts was in 1990 with the construction of improvements between Bitters Road and Sonterra Boulevard, which encompassed the southern end of the US 281 project corridor.

Two transportation improvement projects were recently constructed in the vicinity of the US 281 project corridor: the US 281 Super Street and the southern half of the US 281 interchange with Loop 1604. These projects were primarily intended to improve roadway operations and safety.

ES.3 NEED FOR AND PURPOSE OF THE ACTION

The need for improvements to US 281 arises from historic and continuing trends in population and employment growth along the US 281 project corridor and within the surrounding areas. This growth generates increasing amounts of vehicle travel, which in turn impedes the function of US 281 to provide regional mobility and local access, leading to lengthy travel delays and a high rate of vehicle crashes. These transportation issues negatively affect the quality of life for communities surrounding the US 281 project corridor. The US 281 Corridor Project needs to address growth, functionality, safety, and community quality of life. Factors contributing to the need for improvements are briefly summarized below.

- The number of people living and working within the northern Bexar County and southern Comal County Census Tracts adjacent to the US 281 project corridor has increased dramatically since 1980. Between 1980 and 2010 the population has grown an approximate 1,804 percent and between 1980 and 2012 employment has grown an approximate 1,681 percent. Population and employment is expected to continue growing over the next 25 years. By 2035, the project area will be home to more than 142,000 people, an increase of about 18 percent. The 2012 employment has already exceeded the forecasted 2035 employment by more than 15,000 employees.

- The US 281 project corridor has had only minor capacity improvements since the mid-1970s. As a result, travel demand exceeds capacity during the morning southbound and evening northbound peak periods along the most heavily travelled section of the corridor, between Loop 1604 and Marshall Road. Traffic volumes are expected to increase substantially over the next 25 years.
- The high number of intersecting cross-streets and driveways that provide local access along the US 281 project corridor creates many conflict points that contribute to traffic safety and congestion problems.
- Crash rates within the US 281 project corridor are higher than the statewide rates for similar types of roadways.
- Failure to address the US 281 project corridor's transportation problems has contributed to declining quality of life for nearby communities. Excessive traffic noise is unabated; the corridor has become visually and aesthetically unappealing; and there is a lack of transportation choices due to the absence of public transportation service and facilities for walking and bicycling.

The purpose of the US 281 Corridor Project is to improve mobility and accessibility, enhance safety, and improve community quality of life.

ES.4 ALTERNATIVES CONSIDERED

ES.4.1 No-Build Alternative

The No-Build Alternative assumes the proposed US 281 improvements would not be built, but does include all other transportation improvements as programmed in *Mobility 2035*. The No-Build Alternative is based on the current conditions of the existing US 281 project corridor and includes:

- US 281 Super Street: a series of operational improvements between Encino Rio and Marshall Road at the intersections of US 281 with Encino Rio, Evans Road, Stone Oak Parkway, and Marshall Road (completed in 2010);
- the southern half of the US 281 interchange with Loop 1604 (completed in 2012);
- all planned regional transportation improvements included in *Mobility 2035* (except for the planned improvements to the existing US 281 project corridor); and
- short-term minor maintenance and safety improvements that maintain the continued operation of the existing US 281 project corridor.

A range of Congestion Management Process (CMP) projects aimed at improving air quality is included in the No-Build Alternative. San Antonio is in an area designated as being in attainment or unclassifiable for all National Ambient Air Quality Standards (NAAQS), but is vulnerable to be designated as non-attainment for ozone in the next few years. Examples of the MPO's long range planning initiatives to manage congestion in CMP corridors such as the US 281 project corridor include:

- *Operational Management* – techniques to optimize capacity and improve safety and reliability of the roadway system. For example, Incident Management focuses on clearing incidents, crashes and major events to allow traffic flow to resume.
- *Community Campaigns* – strategies to reduce automobile use and congestion. The Alamo Area Council of Governments' "Commute Solutions Program" and "River Cities Rideshare Program", and the Alamo Area MPO's "Walkable Community Program" lead these efforts.

- *Growth Management/Land Use* – better control over land use to discourage urban sprawl and promote higher density levels and mixed use development to encourage travel by walking, bicycling and transit.
- *Access Management* – controlling the number and placement of access points such as driveways.

Under the No-Build Alternative, the existing transportation infrastructure in the project corridor would remain unchanged for the foreseeable future. The No-Build Alternative, which was studied during the alternatives evaluation process, does not satisfy the forecasted travel demand, is not consistent with local and regional plans and policies, does not provide facilities for multi-modal transportation, does not reduce travel time nor increase travel speeds, does not reduce conflicts between local and through traffic, does not improve access to adjacent property, does not reduce crash rates, and does not improve community quality of life. The No-Build Alternative does not meet the need, purpose and objectives of the US 281 Corridor Project, and as such, is not a reasonable alternative. It is evaluated in this EIS to provide a baseline against which the impacts of the Build Alternatives can be assessed.

ES.4.2 Build Alternatives

Two reasonable Build Alternatives (Expressway and Elevated Expressway) were developed to address the need and purpose of the proposed project while avoiding and minimizing potential impacts.

- The Expressway Alternative provides a limited access facility with grade-separated interchanges and continuous one-way frontage roads. It consists of three main lanes and two-to-three frontage road lanes in each direction.
- The Elevated Expressway Alternative has two-to-three elevated main lanes in each direction. The existing US 281 lanes would be retained to serve as frontage roads for connecting with cross streets and driveways.

The Expressway and Elevated Expressway Alternatives consisted of three funding options.

- *Non-Toll:* All vehicles would be allowed to use the main lanes and frontage road lanes (at-grade outer lanes) without paying a toll.
- *Toll:* All vehicles, unless exempted by Texas State Law, would pay a fixed fee toll, in accordance with Alamo RMA toll policy, for access to tolled main lanes. Under the State Toll Exemption Policy, approved by the Texas Transportation Commission on April 26, 2007, the following types of vehicles are granted free passage on toll roads: 1) authorized emergency vehicles, 2) marked military vehicles, 3) contractors' vehicles working on the construction, improvement, maintenance, or operation of the toll road, and 4) any vehicle in the time of a declared emergency or natural disaster. The frontage road lanes (at-grade outer lanes) would be non-toll.

- *Managed:* Managed lanes are defined by the FHWA as "highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing (roadway) conditions" (FHWA 2007a). Managed lanes can include operational elements such as HOV that control access based on vehicle type and occupancy. For the US 281 Corridor Project, a managed main lane would offer free passage for transit vehicles and for car pools that are registered with a tag in place. All other vehicles, unless exempted by Texas State Law, would pay a fixed fee toll, in accordance with Alamo RMA toll policy. The frontage road lanes (at-grade outer lanes) would be non-toll.

ES.4.3 Preferred Alternative

The Expressway Alternative was identified as the draft Preferred Alternative based on the analysis of environmental, social, and economic impacts associated with the Build and No-Build Alternatives. It was further refined based on public and agency comments received through the Public Hearing process and through coordination with FHWA, TxDOT, Alamo RMA, Peer Technical Review Committee (March 13, 2014), Community Advisory Committee (April 2, 2014), and the public at an Open House held on May 8, 2014.

Each Build Alternative – Expressway Alternative and Elevated Expressway Alternative – had three operational configurations: all lanes non-tolled, all lanes tolled, and all lanes managed. In the April 22, 2013 update of the Metropolitan Transportation Plan (*Mobility 2035*), the MPO clarified the operational configuration of the US 281 Corridor Project to include a combination of non-tolled and managed lanes. This operational configuration was disclosed at the Public Hearing held on June 20, 2013. Comments received through the Public Hearing process were reviewed by TxDOT and the Alamo RMA, resulting in the refined version of the Expressway Alternative (expressway with a combination of non-tolled lanes and managed lanes) being identified as the draft Preferred Alternative. This draft Preferred Alternative is included and consistent with the FY 2015-2018 Transportation Improvement Program (TIP) and Statewide TIP (STIP).

Public Meeting #4 was held on May 8, 2014 to disclose and solicit public input on the draft Preferred Alternative. Following Public Meeting #4, a re-evaluation was conducted to confirm that the combination operational configuration of the Expressway Alternative did not have a significantly different effect on impacts than what was presented in the Draft EIS and would not change the recommendation of the draft Preferred Alternative. The findings of the re-evaluation confirmed that no substantial changes to any resources or issues analyzed in the Draft EIS would result from the change in the operational configuration. Further, all impacts would be within the range of impacts disclosed in the Draft EIS. FHWA, TxDOT and the Alamo RMA consulted in June 2014 and concurred that the Expressway Alternative with the MPO's updated funding arrangement (combination non-toll and managed lanes) be identified as the Preferred Alternative to be carried forward in the Final EIS.

ES.5 SUMMARY OF ENVIRONMENTAL IMPACTS

Direct impacts under the Preferred Expressway Alternative stem from the construction and operation of the roadway itself. Direct impacts are analyzed for the area within the Preferred Alternative's construction footprint, which lies within the larger proposed project study area, an approximately 560 square-mile area in northern Bexar, western Comal County, and small parts of Kendall and Blanco counties. Indirect impacts associated with induced growth are likely to occur within the proposed project's area of influence (AOI – area in which project-related impacts that are removed in time or distance from the proposed project site itself may still occur).

ES.5.1 Impacts to the Human Environment

Land Use

Direct, project-related impacts to land use would occur under the Build Alternatives. Implementation of either of the Build Alternatives would require the acquisition of land along the US 281 project corridor. The greatest impacts would be to open space and commercial land use. The Elevated Expressway Alternative has the potential to impact a total of 99.1 acres, and the Preferred Expressway Alternative has the potential to impact a total of 78.8 acres. In comparing the two Build Alternatives, the Preferred Expressway Alternative would impact more acres of range land, residential land use, and transportation and utilities land use than the Elevated Expressway Alternative; whereas the Elevated Expressway Alternative would impact more acres of forest and open space land uses in comparison to the Preferred Expressway Alternative. The impact of the Build Alternatives is relatively small, ranging between 2.9 and 3.7 percent of the total acreage in the land use study area.

It is not anticipated that either of the Build Alternatives would result in substantial direct impacts to the land uses along the US 281 project corridor within the land use study area. The proposed US 281 Corridor Project is consistent with the planning efforts of the city of San Antonio and Bexar County and is compatible with existing land use, existing zoning regulations, and the *Master Plan* for the city of San Antonio (which includes the *North Sector Plan*).

The proposed US 281 Corridor Project would likely spur land development within the AOI (560 square miles). The AOI for the US 281 Corridor Project was developed using a combination of methods: (1) a select link analysis utilizing the MPO's 2035 travel demand model; (2) an analysis of travel time estimates for trips utilizing the corridor; (3) consideration of the competing influence of other major roadways, like Loop 410; (4) other minor adjustments in consideration of observed development patterns; and (5) consideration of the recommendations from the US 281 EIS Land Use Panel.

Implementation of either of the Build Alternatives would lead to growth that may have effects upon the human and natural environment. To forecast indirect land use effects of the proposed project, the US 281 EIS Team invited a group of individuals with expertise in land use and development within the AOI to participate in a collaborative judgment Land Use Panel. The panel was comprised of planners, engineers, school district officials, land appraisers, non-government organization leaders, and other individuals with demonstrated knowledge in growth and development in the area who were willing to lend their time and expertise.

Overall, the US 281 Land Use Panel predicted an area totaling approximately 37,000 acres of currently undeveloped and uncommitted land within the AOI as likely to be subject to development by 2035 under the US 281 No-Build scenario. The panel further predicted an additional area initially estimated at about 17,000 acres that would be subject to development by 2035 if the proposed US 281 transportation improvements were constructed. This approximately 17,000-acre induced development area is concentrated in the northern half of the AOI, extending from the Honey Creek area in the west, north to the intersection of US 281 and Rebecca Creek Road, and around the Smithson Valley area in the east. The area predicted by the US 281 EIS Land Use Panel to be subject to induced land development is confined to Comal County and does not extend into Bexar, Kendall, or Blanco County.

The panel was asked to predict whether the area they had identified as subject to induced development (17,000 acres) would become larger or smaller depending on which of the Build Alternatives was constructed. The panel thought that an additional 10 percent would be induced by the Expressway Alternative, and an additional 12 percent by the Elevated Expressway Alternative. Because the Preferred Expressway Alternative is a refined version of the Expressway Alternative, it is expected to induce growth in a similar way as the Expressway Alternative.

As an additional refinement, the panel was asked how the various funding options (non-toll, toll, or managed lanes) would further modify the areas subject to induced growth identified for each Build Alternative. Most of the participants indicated "not much change" or "no change." Some panel members thought that the toll or managed lane options would result in reductions in the number of potential commuters, and therefore a reduction in the estimated extent of induced development, by as much as three percent for toll and one percent for managed lanes.

Recognizing the lack of precision inherent in the overall predictive process, these plus-or-minus percentages were applied to the generalized prediction of induced growth to arrive at a comparative approximation, in acres, of the induced growth effects of the various design and funding options. The Elevated Expressway Alternative, non-toll, was estimated by the panel to have the largest effect, at approximately five percent of the AOI, or approximately 19,100 acres. The Expressway Alternative, toll, had the lowest effect, approximately 18,100 acres, which is also approximately five percent of the AOI. The Preferred Expressway Alternative was estimated to affect approximately 18,500 acres.

Socioeconomic Resources

Neighborhoods and Community Cohesion

There are several single- and multi-family residential communities adjacent to the US 281 project corridor. In the short term, neighborhoods in the city of San Antonio and unincorporated areas, communities adjacent to the project, and smaller communities such as apartment communities could be impacted by the Build Alternatives due to construction activities. However, in the long term, the Build Alternatives for the US 281 Corridor Project would provide more travel lanes, improve traffic flow to these communities, and would not restrict access to any existing public facilities or community services, businesses, or commercial areas.

The Preferred Expressway Alternative offers as many or more non-toll travel lanes on US 281 as exist today, making it very unlikely that motorists seeking to avoid paying a toll would divert off of US 281. Motorists are not likely to take a slower, more circuitous route, through communities such as Hollywood Park, because the additional distance and lower speed limits

associated with such detours is not likely to offer an overall travel time savings when compared to the non-toll facilities on US 281. The Preferred Expressway Alternative would not divide, separate, or isolate any neighborhood or community; therefore, community cohesion would remain intact.

Traffic Patterns

The Preferred Expressway Alternative provides new, non-toll grade-separated lanes and overpasses between Loop 1604 and Stone Oak Parkway, as well as new, non-toll at-grade frontage road lanes for access to businesses and cross streets. Between Stone Oak Parkway and Borgfeld Drive, the Preferred Expressway Alternative provides the same number of non-toll at-grade lanes as today. The separation of through traffic (via grade-separated lanes and overpasses) from turning traffic (via the non-toll at-grade lanes) provides for safer, more efficient traffic operations. Some motorists may have to pass through signalized intersections and/or make U-turns to complete their trips.

Overall, the Preferred Expressway Alternative improves mobility and accessibility along the US 281 project corridor. There would likely be a transition period during which roadway users would have to adjust to the changes. The potential changes will be communicated to the public and affected businesses, and will be coordinated with emergency responders and other public service providers.

The managed lanes could result in a change in traffic patterns as some motorists may choose different routes based on their willingness to pay a toll. It is possible that the motorists would choose to avoid the US 281 project corridor and select a parallel route to reach their destination. However, the non-toll lanes on US 281 would offer better speed, capacity and operations, such as fewer stop lights and stop signs, when compared to the parallel routes; as such, traffic diversion onto local streets as a result of the managed lanes is not likely to occur. Mitigation for traffic diversion could include traffic calming techniques on affected roadways, which would further reduce speeds and which would make the parallel routes an even less attractive alternative.

Construction

Construction activities would result in temporary effects such as temporary relocation of driveways and detours. Prior to construction, a traffic control plan will be prepared to manage and route traffic safely and efficiently and maintain access to driveways and cross streets. Traffic will not be routed onto local streets or through neighborhoods; however, it is possible that some motorists may choose to divert onto local streets to avoid construction zones. The development of the traffic control plan will be coordinated with communities that could potentially be affected by temporary traffic diversion during construction, such as Hollywood Park. The commitments made in the traffic control plan will be communicated to and implemented by the construction contractor. Roadside display signs will alert motorists to the time and day of lane closures. Construction activities will be scheduled to prevent and minimize traffic interruption.

After construction is complete, roadway users would have to adjust to the changes in the roadway configuration. The potential changes will be communicated in advance to the public and affected businesses, and will be coordinated with emergency responders and other public service providers.

Community and Public Resources

The Build Alternatives do not require ROW in areas where schools are located and do not interrupt existing school bus routes. As such, no direct impacts to the schools within one-half

mile of the US 281 project corridor are expected. In the long-term, implementation of either of the Build Alternatives would improve access and mobility along the US 281 project corridor, thereby improving access to the schools in the project area.

The Build Alternatives would not restrict access to any community or public resource in the long-term. The Build Alternatives would require some ROW from property owned by places of worship but would not cause any of these places to be displaced. The acquisition of ROW would not prevent the continued use of these properties as places of worship.

Economic Resources

Under the No-Build Alternative, employment levels at currently established businesses could remain the same or change based on market factors. However, without improvements to US 281, the No-Build Alternative would likely have adverse effects on a business patron or employee's ability to access businesses in the study area and adjacent communities as US 281 traffic congestion and travel times continue to worsen.

The US 281 Corridor Project would help generate both short-term (construction-related) and long-term economic benefits. Construction of the project would be a multi-year effort, which would help provide opportunities for short-term employment within the city of San Antonio, Bexar County, and the immediate region. In addition, a large portion of jobs generated by wage expenditures (wages paid for construction jobs) is also likely to be based in the region. Based on an estimated construction cost and multi-year construction duration, the proposed project could generate up to 10,000 jobs in the region. These jobs would include construction and manufacturing/vending jobs, as well as jobs created to meet the demand for goods and services by those employed to construct the proposed project.

The Build Alternatives include managed lanes that are tolled. According to the Alamo RMA Toll Policy, the toll rates could range between $0.17 per mile and $0.50 per mile; for a daily commuter the use of the managed lanes could cost between $680 and $2,000 per year. The 2012 median household income in the socioeconomic study area was approximately $88,500. The toll cost for commuters in the demographic study area represents between 0.8 and 2.3 percent of the median household income assuming that a traveler uses the managed lanes along the complete corridor for every work day trip.

The Preferred Expressway Alternative is unlikely to adversely impact those that work and/or conduct business in the US 281 project corridor, because access to their place of business would be improved. The Preferred Expressway Alternative provides access to corridor area businesses via non-toll lanes, just like occurs today, although in the future overall congestion would be reduced and travel times and safety would be improved when compared with the No-Build Alternative. Employees and business patrons may choose to avoid the toll lanes and select a non-toll lane on US 281 or local street to reach their destination.

Property Tax Revenue

Under the No-Build Alternative, there would be no ROW acquisition and private and public property would not be removed from the tax rolls of local government entities and independent school districts. Long-term economic effects of the Build Alternatives would include the permanent removal of taxable property where additional ROW would be required. The Elevated Expressway Alternative would remove an estimated value of $21,497,862 of taxable property and the Preferred Expressway Alternative would remove an estimated value of $20,478,801 of taxable property (based on 2013 property values). Based on this analysis, the Preferred Expressway Alternative would have less potential loss in property tax revenues at an estimated $431,619 per year than the Elevated Expressway Alternative, which could result

in a $458,552 loss in property tax revenue. Of the taxing jurisdictions that could be impacted, the Comal ISD stands to lose the most annual tax revenue regardless of Build Alternative.

Displacements and Relocations

The ROW required for the Build Alternatives would not result in the displacement of a residence, school, fire or police station, hospital, library, or place of worship. However, commercial and utility displacements would occur. A majority of the commercial displacements would occur on the west side of the US 281 project corridor and north of Stone Oak Parkway where most of the ROW would be required.

Environmental Justice

It is unlikely that low-income or minority populations would experience disproportionately high and adverse impacts under the No-Build Alternative. The No-Build Alternative could result in reduced mobility along the US 281 project corridor, which could, in turn result in adverse effects to all people, including EJ populations. For example, slow travel speeds could require more time to commute to and from work.

No disproportionately high and adverse impacts to minority and/or low-income populations are likely to occur as a result of either of the Build Alternatives under consideration for the US 281 Corridor Project. The Build Alternatives have the potential to displace businesses and could have the effect of displacing jobs within the US 281 project corridor, which could in turn have an adverse effect on the EJ population. However, none of the potentially displaced businesses are major employers nor do they provide for the basic needs of the community overall. The displacement and relocation analysis conducted for the US 281 Corridor Project shows there would be a sufficient amount of commercial, retail, office and industrial space available to absorb the relocation of the displaced businesses.

The project level toll analysis concludes that the Build Alternatives offer a net benefit to all people when compared to the No-Build Alternative, regardless of whether a person chooses a toll or non-toll route. The regional level analysis concludes that no disproportionately high and adverse impacts to EJ populations would likely result from the implementation of the regional toll/managed lane roadway system, in conjunction with the non-toll facilities and other regional transportation alternatives, as planned in *Mobility 2035*.

No disproportionately high and adverse effects are anticipated to result from implementation of the Build Alternatives. Public outreach efforts will continue throughout the project development process to ensure the full and fair participation of all people, including EJ populations, in the decision-making process.

Pedestrian and Bicycle Facilities

The Build Alternatives provide bicycle and pedestrian facilities within the US 281 project corridor ROW on both the east and west sides. These facilities would include a 15-foot outer lane on the frontage roads to accommodate bicycles and a 6-foot wide sidewalk with crosswalks. The bicycle and pedestrian facilities would extend along the entire length of the US 281 project corridor.

Transportation Facilities

Compared to the Build Alternatives, the No-Build Alternative is the least effective at improving traffic speeds and traffic flow during peak period travel times on the US 281 project corridor. The Preferred Expressway Alternative would provide the fastest speeds on all lanes of the US 281 project corridor when compared to the No-Build Alternative and the Elevated

Expressway Alternative. Peak hour travel speeds in 2018 and 2038 would be consistent with the posted speed limits for each lane type.

If no improvements are made, traffic would likely divert from the US 281 project corridor to the parallel corridors and other regional roadways by 2035. The Preferred Expressway Alternative would provide the best future traffic service on all lanes throughout the US 281 project corridor when compared to the No-Build and Elevated Expressway Alternatives.

Overall, the Preferred Expressway Alternative would provide the best travel conditions on the US 281 project corridor of the Build Alternatives evaluated. And, it would provide a substantial improvement over the existing condition.

Air Quality

San Antonio and Bexar County are in an area currently designated by the US Environmental Protection Agency (EPA) as being in attainment or unclassifiable for all air pollutants included in the national ambient air quality standards (NAAQS). Future traffic levels are not expected to cause an exceedance of the NAAQS for either the No-Build Alternative or the Build Alternatives.

The No-Build Alternative and Preferred Expressway Alternative may result in increased exposure to Mobile Source Air Toxics (MSAT) emissions. Diesel particulate matter would decrease substantially between 2015 and 2035 under either alternative. The concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover are expected, over time, to cause region-wide MSAT levels to be significantly lower than today. Overall, total MSAT emissions for the US 281 Corridor Project are expected to decrease 83.6 percent between the base year 2015 and the design year 2035 for the Preferred Expressway Alternative.

Noise

Each of the Build Alternatives would result in traffic noise impacts to noise receivers, the majority of which are residential properties. The Preferred Expressway Alternative is predicted to impact 40 receivers and the Elevated Expressway Alternative is predicted to impact 106 receivers. The No-Build Alternative would also meet or exceed FHWA's Noise Abatement Criteria. Noise abatement measures were analyzed for impacted receiver locations under the Preferred Expressway Alternative, and a noise barrier is proposed near the Big Springs neighborhood. The final decision to construct this noise barrier will not be made until final design, after the Record of Decision (ROD) and subject to the evaluation of utilities and polling of adjacent property owners at a traffic noise workshop.

None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Archeological and Historic Resources

Historic Resources

A 2014 survey of the US 281 Corridor Project Area of Potential Effect (APE) recorded all buildings, structures, and objects constructed in 1971 or earlier. The survey confirmed that 12 of the properties identified in a 2006 historic resources survey are still present within the

current APE and have no substantive changes. Six properties included in the 2006 survey are either outside the current APE, were documented as being built after the historic cut-off date, or have been removed. Six additional residential and commercial properties were identified, bringing the total to 18. The determinations of eligibility made for the previously recorded properties are still valid: none have attained any distinction since 2006 that would cause them to be eligible for National Register of Historic Places (NRHP) listing. In addition, the properties recorded for the first time by the 2014 survey are similar to the ones constructed earlier and lack the required associational or intrinsic significance to be eligible for NRHP listing. Pursuant to Stipulation VI, Appendix 4 "Undertakings with Potential to Cause Effects" of the First Amended Programmatic Agreement for Transportation Undertakings (PA-TU), between the Federal Highway Administration (FHWA), the Texas State Historic Preservation Officer (SPHO), the Advisory Council on Historic Preservation, and the Texas Department of Transportation (TxDOT) and the Memorandum of Understanding (MOU), TxDOT Historians determined that no historic properties are present. Therefore, individual project coordination with SHPO is not required.

Archeological Resources

Numerous archeological surveys have been conducted to date throughout the APE for archeology. Collectively these surveys have documented and evaluated archeological resources over approximately 65 percent of the APE. There are 13 sites within the APE for the Preferred Expressway Alternative. Twelve of these sites are neither listed in nor considered eligible for listing in the NRHP or as State Archeological Landmarks (SALs). One site was recommended for further testing to determine NHRP and/or SAL eligibility; however, in February 2014, TxDOT evaluated unsurveyed portions of the APE and determined that the project would have no effect on any NRHP or SAL-eligible archeological sites. It was determined that archeological studies under Section 106 of the National Historic Preservation Act (NHPA) were complete, and the State Historic Preservation Officer (SHPO) concurred on February 12, 2014 (see **Appendix L1**). Therefore, there is *No Effect* on Archeological Historic Properties or SALs. Compliance with Section 106 of the NHPA also requires FHWA to consult with federally-recognized Native American tribes regarding this undertaking. Consultation with federally recognized tribes with a demonstrated interest in the region was completed pursuant to FHWA's Programmatic Agreement with TxDOT, the SHPO, and the Advisory Council on Historic Preservation.

Visual and Aesthetic Resources

The US 281 project corridor provides a view of commercial and residential development. The northern portion of the corridor is less dominated by development and includes areas with large tracts of native trees and shrubs interspersed with small businesses (adjacent to US 281) and single-family residences (set back from the US 281). Both roadway users and roadway viewers would be impacted by either of the Build Alternatives. The Elevated Expressway Alternative has the greatest potential to negatively impact residential roadway viewers and positively impact for roadway users.

Negative impacts on roadway viewers will be mitigated, where practicable, by landscaping and aesthetic treatments. All lighting for the Build Alternatives will be acceptable fixtures that meet or exceed the City of San Antonio City Code – Section 35-339.04 and Bexar County Commissioners Court Regulation No. 12.501.072208 for "full cutoff" criteria (no light output emitted above 90 degrees at any lateral angle around the fixture). The U.S. 281 project corridor falls within the Hill Country Region identified by TxDOT—San Antonio District's *Urban Design Themes for Bexar and Outlying Counties*. The design themes provide guidance on

aesthetic form, function, and appearance of new highway elements in Bexar County. Visual aesthetic and landscaping treatments for the US 281 Corridor Project will reflect the Hill Country Region theme, consisting of simple materials that translate the historical architecture of Hill Country towns into modern structures of the highway.

Hazardous Materials

A regulatory database search identified 35 permitted and non-regulated facilities that currently store, have stored in the past, or have been impacted by hazardous and regulated materials along the US 281 project corridor. Each Build Alternative has the potential to impact eight properties that currently have or have had in the past, hazardous and regulated materials on site. The Build Alternatives are generally comparable with the exception that the Preferred Expressway Alternative has the potential to impact two properties that have had leaking petroleum storage tanks on site, as compared to one property for the Elevated Expressway Alternative. If a Build Alternative is selected in the Record of Decision (ROD), subsurface investigations will need to be considered within the vicinity of leaking petroleum storage tanks sites to determine if hazardous materials from any of these facilities have adversely affected the subsurface conditions of the area.

The storage and use of hazardous materials will be necessary during construction of the proposed project. Use and handling of hazardous materials associated with construction machinery and equipment would pose a minimal risk to the environment if appropriate safety measures and best management practices (BMPs) are applied. On-site storage of hazardous materials within the proposed project area will be short-term and closely monitored.

ES.5.2 Impacts to the Natural Environment

Geology and Soils

Impacts to geologic resources as a result of the Build Alternatives are anticipated to be minor. Construction activities may expose geologic units resulting from erosion during construction, but erosion will be minimized by using proper techniques and BMPs during construction. Soils could be affected by soil compaction, erosion, or sedimentation, but BMPs will minimize these impacts.

A geologic assessment was prepared in 2010 that included detailed surveys for karst features within the existing US 281 ROW and accessible properties immediately adjacent to the ROW. A total of 116 features were documented and evaluated during the surveys, including natural and manmade features. Sixty-five features would be impacted within the ROW of the Preferred Expressway Alternative and would require some action prior to or during the construction phase. These include both sensitive and non-sensitive karst features, faults, wells, and springs. Construction and operation of the Preferred Expressway Alternative would directly impact the openings of 24 features that were identified as potential sensitive features. These 24 features are located in the path of the proposed improvements or in areas that would be disturbed by construction and will require action, such as berming or backfilling prior to or during construction to protect water quality.

Waters of the United States and Wetlands

Waters of the United States (U.S.) present in the ROW of the Build Alternatives include Mud Creek, West Elm Creek, Elm Waterhole Creek, their tributaries, and tributaries to Cibolo Creek. All of the water crossings in the project area are ephemeral streams that only flow for short durations after rain events.

A field survey was performed in March 2014 within the existing ROW of US 281 and accessible properties immediately adjacent to the ROW. The survey resulted in the identification of 13 stream crossings and 1 off-channel pond. The Elevated Expressway Alternative would permanently impact 10 of the 13 crossings compromising 1.7 acres of waters of the U.S. The Preferred Expressway Alternative would result in permanent impacts to 10 of the 13 crossings, comprising 1.5 acres of waters of the U.S. All ten crossings currently have box culverts which will be replaced with new box culverts; some would be relocated or extended to include the entire length of the proposed ROW. Proposed construction of the Preferred Expressway Alternative at waters of the U.S. will be permitted under a Nationwide Permit (NWP) 14 of the Clean Water Act, with pre-construction notification required for five of the ten crossings.

Water Quality and Quantity

The US 281 project corridor lies over both the Edwards Aquifer Recharge Zone and Contributing Zone. Potential consequences of the proposed project on Edwards Aquifer groundwater quality and quantity would be negligible due to proposed water quality protection measures and BMPs. Potential for pollutants in stormwater runoff from the construction site and completed roadway to enter the aquifer and potential for changes in recharge rates to the aquifer resulting from increases in impervious cover would be minor. The Preferred Expressway Alternative would have the largest amount of increased impervious cover (118 acres) compared to the Elevated Expressway Alternative (92 acres). Impacts will be minimized by the use of BMPs during roadway construction and operation, including water quality ponds, vegetative filter strips, and grassy swales. The BMPs to be utilized under the Build Alternatives will remove at least 80 percent of post-construction total suspended solids (TSS) over the Recharge and Contributing Zones.

With the exception of the recently constructed US 281 Super Street, the existing US 281 project corridor has unpaved and informal shoulders and does not have a storm water drainage system that meets current Texas Commission on Environmental Quality (TCEQ) *Water Pollution Abatement Plan* (WPAP) standards (TCEQ 2010d). Under the No-Build Alternative, water quality in the US 281 project corridor would remain susceptible to contaminants in stormwater runoff. The effective use of BMPs would result in an improvement in the quality of surface water and groundwater associated with the US 281 project corridor.

Over five acres of earth would be disturbed as a result of either of the Build Alternatives, requiring a *Stormwater Pollution Prevention Plan* (SW3P). The SW3P will be followed throughout construction phases to minimize sediment-laden storm water discharge to project corridor streams. The SW3P may include, but is not limited to, silt fences, inlet protection barriers, hay bales, and seeding or sodding of excavated soils. Exposure of the soil surface will be minimized during all clearing activities in order to maintain soil integrity. All temporary erosion control measures will be implemented prior to the start of construction and maintained throughout the phases of construction. At the completion of construction, TxDOT's *Seeding for Erosion Control* will be followed to restore and reseed all disturbed areas (TxDOT 2004).

Stormwater runoff will be addressed through compliance with the Texas Pollutant Discharge Elimination System (TPDES) and Edwards Aquifer WPAP. Based on current design concepts, the Preferred Expressway Alternative will span the ordinary high water mark (OHWM) of creeks present in the ROW. It is assumed that the bridge piers will not be placed in locations that would increase the base flood elevation; therefore, no impacts to floodplains would be expected under the Build Alternatives.

The Build Alternatives have the potential to impact groundwater quantity by impacting both recharge to the aquifer (e.g. impervious cover and karst features) and discharge from the aquifer (e.g. wells and springs). However, the proposed water quality BMPs would slow runoff velocities, thereby increasing the potential for recharge, in addition to removing pollutants from runoff. The BMPs for the US 281 Corridor Project would capture storm water runoff; this stored runoff would slowly be released to receiving waters following peak flows and would allow more runoff to recharge the Edwards Aquifer.

Construction activities associated with the Build Alternatives could change infiltration rates and flow dynamics resulting from impacts to vegetation coverage, soil compaction, and changes in soil roughness. The use of BMPs, such as silt fences, inlet protection barriers, hay bales, and seeding or sodding of excavated soils during construction would minimize impacts to groundwater quantity. The BMPs will be documented in the SW3P and followed throughout construction phases to minimize sediment-laden stormwater discharge.

Threatened and Endangered Species

The project area was studied for the presence of federal and state listed threatened, endangered, or candidate wildlife species and their habitats. Habitat for one candidate and four federally listed species was identified within the existing and proposed ROW of the Preferred Expressway Alternative. These species include the bracted twistflower (*Streptanthus bracteata*), Madla's Cave meshweaver (*Cicurina madla*), the ground beetles *Rhadine exilis* and *Rhadine infernalis* and the golden-cheeked warbler (*Dendroica [=Setophaga} chrysoparia*). Critical Habitat for endangered karst invertebrates does occur within the project area.

Bracted Twistflower

Specific surveys for this species have not been conducted; however, it was not observed during avian surveys conducted during the blooming period in potential habitat in 2009–2010. While this species could possibly occur, it is not likely given the disturbed nature of the woodlands along the corridor and the prevalence of herbivores such as the white-tailed deer. Given uncertainty associated with its presence or absence, there is a potential that the US 281 Corridor Project may impact this species, but TxDOT has determined that this species would not be adversely affected by the proposed project. Should the species become listed prior to construction, presence-absence surveys would be conducted in appropriate habitat within existing and proposed ROW.

Karst Invertebrates

C. madla, R. exilis, and *R. infernalis* are known to occur in areas of suitable karst habitat located in the Stone Oak KFR of Bexar County. In addition, Critical Habitat Unit (CHU) 12 is a 166 acre unit that crosses into the proposed project area, located within a residential subdivision on the west side of US 281. This unit consists of two caves, Hairy Tooth Cave and Ragin' Cajun Cave, both containing *R. exilis*. The CHU is located mostly within the residential subdivision, with a small portion (0.023 acre) extending into the proposed ROW for the Preferred Expressway Alternative.

All existing known karst features within the project area have been surveyed for the presence of listed karst invertebrates, where right of entry was granted. It is unknown if there are any additional karst features within the project area, although the presence of additional karst features is likely. If karst features are present, it is also unknown if they are occupied by *C. madla, R. exilis,* and/or *R. infernalis.* If these species are present within karst features discovered during project construction, take of the species in the form of harm or harassment would likely occur. TxDOT has determined this project "may affect, and is likely to adversely affect" *C. madla, R.exilis,* and *R. infernalis*; and therefore submitted a final Biological Assessment and request for formal consultation to the U.S. Fish and Wildlife Service on January 6, 2015.

Although the possibility of affecting karst invertebrates cannot be eliminated, the effects have been minimized to the maximum extent possible for this project. In addition, TxDOT has developed voluntary conservation measures to avoid or minimize impacts to *C. madla, R. exilis,* and *R. infernalis*. Therefore, after reviewing the Biological Assessment it is the Biological Opinion of USFWS that the US 281 Corridor Project, as proposed, is not likely to jeopardize the continued existence of *C. madla, R. exilis*, and *R. infernalis,* nor result in the adverse modification or destruction of designated critical habitat.

Section 9 of the Endangered Species Act (ESA) and Federal regulation pursuant to Section 4(d) of ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the proposed project is not considered to be prohibited taking under ESA provided that such taking is in compliance with the terms and conditions described in the Biological Opinion. It is anticipated that incidental take of *R. infernalis, R. exilis* and *C. madla* would be difficult, if not impossible, to detect and quantify due to their extremely small size and subterranean, often inaccessible, karst habitat. Therefore, the incidental take of all *C. madla, R. exilis* and *R. infernalis* in any karst features underlying a 1,530 acre action area, in the form of harm or harassment, may occur as a result of this proposed project.

The USFWS believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of *C. madla, R. exilis* and *R. infernalis*:

- TxDOT will fully implement the Voluntary Conservation Measures proposed in their Biological Assessment for this project.
- TxDOT will provide information and training to all employees and contractors working on the project on the measures proposed to avoid impacts to karst invertebrate and golden-cheeked warbler habitat.
- TxDOT will monitor the take of *C. madla, R. exilis,* and *R. infernalis,* using acreage impacted by the project as a proxy, and provide periodic monitoring reports to the USFWS.

Golden-cheeked Warbler

A habitat assessment performed in 2009 identified potential GCWA habitat in the US 281 biological study area. Based on the current design of the Preferred Expressway Alternative, approximately 45 acres of GCWA habitat would be cleared within the existing and proposed ROW.

After three years of presence/absence survey using USFWS protocol, no GCWA have been detected. Habitat losses continue due to current and pending development along the US 281 project corridor. In addition, nesting deterrents for the warbler are prevalent and likely

increasing due to urbanization, including effects from typical nest predator and social parasite species such as the Great-tailed Grackle and Brown-headed Cowbird. Given the negative survey findings to date and decline of habitat quality, it is not likely that the GCWA will utilize the project area. Therefore, the US 281 Corridor Project may affect, but is not likely to adversely affect, the GCWA. The USFWS concurred with this finding in a letter dated January 7, 2015.

To avoid/minimize any potential impacts to the GCWA, the following guidelines would be followed during construction:

- Limiting removal of woody vegetation to outside of the breeding and nesting season, which lasts from March 1 to September 1.
- Limiting removal of vegetation to that necessary for constructing the US 281 Corridor Project.
- Locating construction staging areas away from potential GCWA habitat.

State Listed Species

Habitat for four state-listed species, (two salamanders and two reptiles) occurs within the US 281 biological study area of the Build Alternatives. The US 281 Corridor Project is not likely to negatively impact these species because their habitat is marginal, no individuals were observed, and the impacted potential habitat is common in the vicinity of the US 281 project corridor. Efforts will be made to avoid direct harm to individuals of state listed species during construction in accordance with TPWD regulations.

Rare Species (unlisted)

Habitat for 18 rare species (3 plants, 7 crustaceans, 2 arachnids, 1 insect, 1 amphibian, 2 reptiles, and 2 mammals) that are not state or federally-listed was identified as potentially occurring within the US 281 biological study area. No observations of big red sage, Correll's false dragon-head, Hill Country wild-mercury, Rawson's metalmark, spot-tailed earless lizard, Texas garter snake, cave myotis bat, or the Plains spotted skunk were made during on-site habitat assessments in 2010 within the US 281 biological study area. Therefore, the Preferred Expressway Alternative may impact these species, but through the proposed mitigation measures it is not likely to negatively impact these species. Efforts will be made to avoid direct harm to individuals of rare species during construction, particularly those most vulnerable to earth moving equipment and water quality impacts.

Vegetation

Vegetation communities occurring within and adjacent to the proposed ROW for each of the Build Alternatives would be directly impacted by construction related activities. Live Oak-Ashe Juniper Park and Live-Oak-Mesquite Ashe-Juniper Park are the dominant vegetation communities within the vegetation study area; these are also the communities that would be impacted most by the Build Alternatives. None of the vegetation communities along the US 281 project corridor provide habitat for federal candidate species. In addition, none of the plant communities in the vegetation study area listed as state species of conservation concern. Bottomland hardwoods and native prairies were not found during field surveys in May 2012. The vegetation habitats in the vegetation study area are relatively common for South-central Texas.

Both Build Alternatives would have generally similar impacts to vegetation. The Preferred Expressway Alternative would impact approximately 68 acres of wooded area, 104 acres of unmaintained vegetation (non-wooded), and 167 acres of maintained vegetation (primarily

ROW that is mowed on a regular basis and residential/commercial landscaping). The Elevated Expressway Alternative would impact approximately 80 acres of wooded area, 111 acres of unmaintained vegetation and 170 acres maintained vegetation.

Riparian areas will only be removed where necessary within the existing and proposed ROW. In order to avoid and/or minimize riparian impacts, contractors where practicable will remove trees by cutting at or slightly above ground level to allow roots to remain intact to prevent erosion and maintain bank stability. In addition to stabilizing banks, leaving roots increases the probability that the area will revegetate naturally with existing species following construction.

ES.5.3 Indirect and Cumulative Effects

The US 281 AOI is a high growth area where the potential for both induced and other foreseeable future development is substantial. Current federal, state and local regulations afford a measure of protection to water quality and endangered species. These include the Clean Water Act, the Endangered Species Act, TCEQ regulations, and the City of San Antonio's Aquifer Protection Program. There are also a number of other governmental and non-governmental programs, policies, and activities currently on-going that will potentially mitigate effects of the proposed project as well as other projects on water quality and endangered species. There are numerous specific, on-going resource conservation and preservation programs and projects by governmental agencies and private conservation interests that will individually and collectively minimize direct, indirect, and cumulative effects to natural resources. Cumulative impacts associated with past, present, and future development within the area can be reduced through implementation of the conservation plans, policies, and regulations that are intended to protect environmental resources and the human quality of life.

ES.6 PUBLIC AND AGENCY COORDINATION

The US 281 EIS process was conducted with an extensive public and agency involvement program. The FHWA, TxDOT, and the Alamo RMA have provided extensive opportunities for stakeholders to be engaged and involved in each step of the US 281 EIS process. Comments and input received as part of this outreach helped shape the alternatives and impact analysis used in the US 281 EIS. The following activities occurred as part of the public and agency involvement program:

- Notice of Intent (NOI), published in the *Federal Register* on Wednesday, July 8, 2009 and in the *Texas Register* on Friday, July 24, 2009
- Four public meetings
  - August 27, 2009 (Scoping Meeting #1)
  - November 17, 2009 (Scoping Meeting #2)
  - April 29, 2010 (Public Meeting #3), and
  - May 8, 2014 (Public Meeting #4)
- Public Hearing on June 20, 2013
- Nine meetings of the US 281 EIS Community Advisory Committee
- Five meetings of the Peer Technical Review Committee

- Newsletters mailed to approximately 38,000 addresses within the US 281 project corridor prior to each public meeting
- The "Get the 411 On 281 EIS" website launched in July 2009 and continuously updated throughout the EIS process
- Social media including Twitter (http://twitter.com/411on281), Facebook (http://www.facebook.com/411on281), Socializer and blogs

ES.7 ADDITIONAL FUTURE ACTIONS

This Final EIS has been developed to comply with the National Environmental Policy Act and serves as the public disclosure document for this project by presenting the anticipated environmental consequences of each alternative with possible reasonable and feasible mitigation measures. The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

Upon review of the Final EIS, TxDOT will publish a Notice of Availability (NOA) and allow for a 30-day wait period. TxDOT will issue a ROD no sooner than 30 days following publication of the NOA. If a Build Alternative is selected, this would allow the project to be advanced to final design, ROW acquisition, and construction phases. All project-specific commitments and conditions of approval, including resource agency permitting, compliance, and monitoring requirements will be stated in the ROD. Mitigation monitoring will be conducted by TxDOT, the Alamo RMA, and other appropriate federal, state, and local agencies to ensure compliance with the agreed upon mitigation measures.